

WHAT IS CLAIMED IS:

1. A method for managing communication of electronic data between a diagnostic service center and a plurality of mobile assets generally remote relative to each other, the electronic data comprising at least respective mobile asset data indicative of respective performance of the plurality of mobile assets, the mobile asset data used for detecting the presence of potential malfunctions which, if left uncorrected, would likely result in respective mission failures of the assets, the method comprising:

10 storing in a database a list of respective cases to be processed;
 assigning to each case a respective download priority;
 determining each case to be populated next with new mobile asset data based
at least upon the assigned download priority;
 executing a download of the new mobile asset data between the diagnostic
service center and a respective one of the mobile assets; and
 executing predetermined analysis on the downloaded data for detecting the
presence of respective potential malfunctions in the mobile assets.

15 2. The method of claim 1 further comprising a step of assigning to each respective case a respective download time and wherein the step of determining the next case to be populated with new mobile asset data is further based upon the assigned download time.

20 3. The method of claim 1 further comprising a step of classifying each respective download of mobile asset data into a respective class of download and wherein the step of determining the next case to be populated with new mobile asset data is further based upon the respective download class.

25 4. The method of claim 1 further comprising a step for assigning at least one communication-enabling device for executing a respective download of new mobile asset data and wherein the step for assigning the at least one communication-

enabling device is based at least upon the relative priority of the download and/or a respective classification of the download.

5. The method of claim 1 further comprising a step of assigning to each respective download file a corresponding file tracking number.

5 6. The method of claim 1 wherein the executing of download of new mobile asset data occurs upon detection of one or more critical faults in the mobile assets.

10 7. The method of claim 6 further comprising automatically initiating a call from a respective mobile asset to the center upon detection of one or more critical faults therein.

8. The method of claim 1 wherein the step of executing download of new mobile asset data occurs at predetermined time intervals.

9. The method of claim 1 wherein the step of executing download of new mobile asset data occurs on demand.

15 10. The method of claim 1 further comprising a step of generating an electronic customer report containing diagnostics and/or repair information for respective subsystems of the mobile asset, said report based on the analysis executed on the respective download data and wherein the electronic report is generated at predetermined time intervals and/or upon the occurrence of critical faults.

20 11. The method of claim 1 wherein the mobile asset comprises a locomotive or other large land-based self-powered transport equipment.

12. A method for identifying critical faults in a plurality of mobile assets, the method comprising:

a) collecting from a group of the plurality of mobile assets respective mobile asset data indicative of each fault logged over a predetermined period of time;

5 b) classifying respective faults in the collected mobile asset data based on the following criteria:

1) relative frequency of fault occurrence;

2) number of mobile assets affected in the group; and

3) expected level of mobile asset degradation;

10 wherein any of the three criteria comprises a first basis of classification, and a second classification is based on the results of the first classification so that any faults found to be critical include properties in at least two of the classifications; and

c) storing any faults found to be critical in a database of critical faults.

15 13. The method of claim 12 wherein all three criteria are separately considered in sequence and further wherein each classification is based on the results of any previous classification so that the faults found to be critical include properties in all three classifications.

14. The method of claim 12 wherein the database of critical faults is used 20 in a process for assigning priorities to communications of electronic data between a diagnostic service center and a plurality of mobile assets generally remote relative to each other, the assigned priorities being used for managing the handling of such communications, the electronic data comprising at least respective new mobile asset data from selected mobile assets, the process comprising:

25 storing in a database a list of respective cases to be processed;

assigning to each case a respective download priority based on the existence of critical faults in the case; and

determining each case to be populated next with new mobile asset data based at least upon the assigned download priority.

15. The method of claim 14 further comprising executing a download of new mobile asset data wherein said download of new mobile asset data is triggered upon a call from a respective mobile asset to the service center, the call identifying occurrence in the respective mobile asset of one or more faults of the type stored in
5 the critical fault database.

16. The method of claim 15 further comprising prioritizing analysis of mobile asset data including critical faults.

17. A system for identifying critical faults in mobile assets, the system comprising:

10 memory configured to collect from a plurality of the mobile assets respective mobile asset data indicative of each fault logged over a predetermined period of time;

15 a first classifier configured to classify in the collected mobile asset data respective faults most frequently occurring relative to one another;

20 a second classifier configured to classify in the most frequently occurring faults from the first classifier, respective faults that, relative to one another, affect a higher number of mobile assets;

a third classifier configured to classify the faults from the second classifier based on an expected level of mobile asset degradation; and

25 a database coupled to the third classifier to store any faults classified as likely to result in an imminent mobile asset mission failure, the stored faults comprising the plurality of critical faults.

18. The system of claim 17 wherein the database of critical faults is used in a processor for managing communication of electronic data between a diagnostic service center and the plurality of mobile assets situated generally remote relative to each other, the electronic data comprising new mobile asset data used from selected mobile assets, the processor comprising:

a module configured to execute a download of the new mobile asset data wherein said download of new mobile asset data is triggered upon a call from a

respective mobile asset to the service center, the call identifying occurrence in the respective mobile asset of one or more faults of the type stored in the critical fault database.

19. The system of claim 18 wherein the call to the service center is
5 automated upon detection in the mobile asset of one or more of the faults of the type stored in the critical fault database.

10 20. A system for managing communication of electronic data between a diagnostic service center and a plurality of mobile assets generally remote relative to each other, the electronic data comprising respective mobile asset data indicative of respective performance of the plurality of mobile assets, the mobile asset data used for detecting the presence of potential malfunctions which, if left uncorrected, would likely result in respective mission failures of the assets, the system comprising:

15 a database configured to store a list of respective cases to be processed;
a first processor module configured to assign to each case a respective download priority;
a second processor module configured to determine each case to be populated next with new mobile asset data based at least upon the assigned download priority;
a third processor module configured to execute a download of the new mobile asset data; and
20 a fourth processor module configured to execute predetermined analysis on the downloaded data for detecting the presence of respective potential malfunctions in the mobile assets.

21. The system of claim 20 wherein the first processor module is further configured to assign to each respective case a respective download time and wherein
25 the second processor module is coupled to receive the assigned download time so that each respective determination processed is said second module is further based on the assigned download time.

22. The system of claim 20 further comprising a classifier configured to classify each respective download of mobile asset data into a respective download class and wherein the second processor module is further coupled to receive the respective download class so that each respective determination processed in said processor is further based on the respective download class.

23. The system of claim 20 further comprising a communications-device assigner configured to assign at least one communication-enabling device for executing a respective download of new mobile asset data and wherein the assigning of the at least one communication-enabling device is based at least upon the relative priority of the download and/or a respective classification of the download.

24. The system of claim 20 further comprising a tracker module configured to assign to each respective downloaded file a corresponding file tracking number.

25. The system of claim 20 further comprising a call initiator module configured to automatically initiate a call from a respective mobile asset to the center upon detection of one or more critical faults in the mobile assets.

26. A system for identifying critical faults in a plurality of mobile assets, the system comprising:

memory configured to collect from a group of the plurality of mobile assets respective mobile asset data indicative of each fault logged over a predetermined period of time;

a processor configured to classify respective faults in the collected mobile asset data based on the following criteria:

- 25 1) relative frequency of fault occurrence;
- 2) number of mobile assets affected in the group; and
- 3) expected level of mobile asset degradation;

wherein any of the three criteria comprises a first basis of classification, and a second classification is based on the results of the first classification so that any faults found to be critical include properties in at least two of the classifications.

5 27. The system of claim 26 wherein all three criteria are separately processed by the processor in sequence and further wherein each classification is based on the results of any previous classification so that the faults found to be critical include properties in all three classifications.

10 28. The system of claim 26 wherein the database of critical faults is used by a priority-assigner processor configured to assign priorities to communications of electronic data between a diagnostic service center and a plurality of mobile assets generally remote relative to each other, the assigned priorities being used for managing the handling of such communications, the electronic data comprising at least respective new mobile asset data from selected mobile assets, the priority-assigner processor comprising:

- a database configured to store a list of respective cases to be processed;
- a module configured to assign to each case a respective download priority based on the existence of critical faults in the case; and
- a module configured to determine each case to be populated next with new mobile asset data based at least upon the assigned download priority.

20 29. The system of claim 26 further comprising a download module configured to execute a download of new mobile asset data wherein said download of new mobile asset data is triggered upon a call from a respective mobile asset to the service center, the call identifying occurrence in the respective mobile asset of one or more faults of the type stored in the critical fault database.